

acrylate and combinations thereof.

**REMARKS**

Applicant has canceled claim 26 as requested by the Examiner but traverses the 35 USC 112 indefiniteness rejection of claims 1-25.

The Examiner has indicated that claims 1-25 would be allowable if amended to overcome the stated rejections and the claims have been amended to address the rejection.

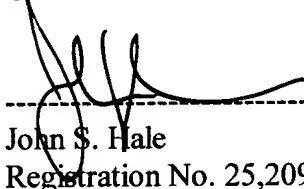
New dependent claims 27-30 depend from allowed claim 1.

If any additional charges are required, please charge Deposit Account Number 07-1340. A one month extension of time and check for the same and the newly added claims 27-30 are also attached together with a fee transmittal sheet.

It is respectfully submitted that the arguments and amendments place the present application in condition for allowance and passage to issue.

Respectfully submitted,

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**MARKED UP VERSION OF CLAIMS WITH MARKING**

**TO SHOW CHANGES MADE**

Claim 1. (Currently Amended) A polishing device comprising a body made of porous polyvinyl acetal material having a uniform pore size throughout ~~the core material of~~ the body with over 80% of the pores being below 40 microns in diameter, said body being coated with a ~~low viscosity~~ slurry comprising a hydrophillic urethane based adhesive and mixed abrasive particles of polishing materials which are cured ~~[[to]]~~ on said body to form a thin abrasive skin which is absorbed into the body pores and follows the contour of the pores ~~[[of an]]~~ and an outer surface of said body.

Claim 2. (Original) A polishing device as claimed in claim 1 wherein said abrasive particles are selected from the group consisting of  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$  ranging in size from 0.1 microns to about 100.0 microns.

Claim 3. (Original) A polishing device as claimed in claim 1 wherein said abrasive particles are selected from the group consisting of  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$  ranging in size 0.5 microns to about 7.0 microns.

Claim 4. (Original) A polishing device as claimed in claim 1 wherein said abrasive particles are selected from the group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black silicon carbide, green silicon carbide, silicon nitride, titanium diboride, boron carbide, tungsten carbide, titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron nitride, garnet, alumina zirconia, zirconium oxide, sol gel abrasive particles, and combinations thereof.

Claim 5. (Original) A polishing device as claimed in claim 1 wherein said polyvinyl acetal material has an average pore size of about 20 microns.

Claim 6. (Original) A polishing device as claimed in claim 1 wherein the weight of the

adhesive particles is preferably less than 5% of the wight of said slurry.

Claim 7. (Original) A polishing device as claimed in claim 1 wherein said polishing device is a pad.

Claim 8. (Original) A polishing device as claimed in claim 1 wherein said polishing device is a roller.

Claim 9. (Original) A polishing device as claimed in claim 1 wherein said polishing device is a disk.

Claim 10. (Original) A polishing device as claimed in claim 1 wherein said cured skin is less than 1 millimeter in thickness.

Claim 11. (Currently Amended) A polishing device as claimed in claim 1 wherein the weight of the ~~adhesive~~ abrasive particles range from 5% to 80% of the weight of said slurry.

Claim 12. (Currently Amended) A semiconductor polishing device comprising a core body made of porous polyvinyl acetal material having a cylindrical roller shape and a outer surface, said material having a uniform pore size throughout with at least 80% of the pores ranging from about 7 microns to about 40 microns in diameter, a slurry of adhesive hydrophilic polymer of ~~low viscosity~~ and abrasive particles ranging from 0.5 to about 100.0 microns and comprising from 5% to 80% of the slurry by weight, said slurry being coated and cured on said outer surface of said cylindrical roller forming an abrasive skin.

Claim 13. (Original) A semiconductor polishing device as claimed in claim 12 wherein said abrasive particles are selected from the group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black silicon carbide, green silicon carbide, silicon nitride, titanium diboride, boron carbide, tungsten carbide, titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron

nitride, garnet, alumina zirconia, zirconium oxide, sol gel abrasive particles, and combinations thereof.

Claim 14. (Currently Amended) A semiconductor polishing device as claimed in claim 12 wherein said adhesive is selected from the group consisting of allphatic polyether ~~urthane~~ urethane methacrylate, aromatic difunctional polyether urethane methacrylate and allphatic urethane acrylate.

Claim 15. (Currently Amended) A semiconductor polishing device as claimed in claim 12 wherein said abrasive skin ~~[[has]]~~ comprises composite particles having a size of about 1.2 microns.

Claim 16. (Original) A semiconductor polishing device as claimed in claim 12 wherein said abrasive skin is about 1.0 microns in thickness.

Claim 17. (Currently Amended) A semiconductor polishing device comprising a substantially cylindrical roller body made of polyvinyl acetal ~~with its core~~ having uniform ~~material~~ porosity with 80% of its pores ranging from 7 to 40 microns and an abrasive particle and ~~low viscosity~~ urethane adhesive composite skin cured to said ~~[[core]]~~ body, said urethane adhesive being selected from the group consisting of allphatic polyether urthane methacrylate, aromatic difunctional polyether urethane methacrylate and allphatic urethane acrylate, said skin ranging in thickness from 0.5 to 7.0 microns.

Claim 18. (Currently Amended) A semiconductor polishing device comprising a ~~[[core]]~~ body made of porous polyvinyl acetal material having a cylindrical roller shape and a outer surface, said material having a uniform pore size throughout with at least 80% of the pores ranging from about 7 microns to about 40 microns in diameter with a fluid flow through rate which does not distort the roller during the polishing process, a slurry comprising an adhesive of polyvinyl acetal material mixed with water and a composite abrasive material, said slurry having a viscosity less than the viscosity of ~~said core~~ the polyvinyl acetal material mixed with a composite abrasive material forming said device body, said composite abrasive material comprising particles of abrasive material mounted in carrier particles of polyvinyl acetal, said slurry being coated and cured on said outer surface of said cylindrical roller to form

an abrasive skin.

Claim 19. (Currently Amended) A semiconductor ~~cleaning~~ polishing device as claimed in claim 18 wherein said ~~metal is an abrasive material~~ particle is selected from the group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black silicon carbide, green silicon carbide, silicon nitride, titanium diboride, boron carbide, tungsten carbide, titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron nitride, garnet, alumina zirconia, zirconium oxide, sol gel abrasive particles, and combinations thereof.

Claim 20. (Currently Amended) A process of making a semiconductor polishing roller comprising of the steps of:

- a. molding a roller body of clean ~~[[PVA]]~~ porous polyvinyl acetal sponge with over 80% of the pores of said porous polyvinyl acetal sponge ranging from about 7 microns to about 40 microns in diameter;
- b. applying a coating of a slurry comprising an adhesive ~~having a low viscosity~~ and abrasive particles to the outer surface of said roller to form a skin; and
- c. curing said slurry skin to said roller body with ultra violet light forming a unitary roller device with a thin abrasive skin.

Claim 21. (Original) A process of making a semiconductor polishing roller as claimed in claim 20 wherein said curing takes place over a period ranging from .1 minutes to 5 minutes.

Claim 22. (Original) A process of making a semiconductor polishing roller as claimed in claim 20 wherein said curing takes place in about 1 minute at about 300 watts.

Claim 23. (Original) A process of making a semiconductor polishing roller as claimed in claim 20 wherein said coating applied is less than 0.2mm in thickness.

Claim 24. (Currently Amended) A ~~claim according to process of making a semiconductor~~  
polishing roller as claimed in claim 20 wherein said abrasive ~~material is~~ particles are selected from the  
group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black  
silicon carbide, green silicon carbide, silicon nitride, titanium diboride, boron carbide, tungsten carbide,  
titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium  
oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron nitride, garnet, alumina  
zirconia, zirconium oxide, sol gel abrasive particles and combinations thereof.

Claim 25. (Currently Amended) A ~~claim according to process of making a semiconductor~~  
polishing roller as claimed in claim 20 wherein said ~~low viscosity~~ adhesive is selected from the group  
consisting of formulated aliphatic polyether urethane methacrylate, aromatic difunctional polyether  
urethane methacrylate; formulated multifunctional aliphatic urethane acrylate and combinations thereof.

Claim 26. (Canceled)

Claim 27. (New) A polishing device as claimed in claim 1 wherein said polyvinyl acetal body  
has a durometer ranging from 5-9 depending upon wetness of the material.

Claim 28. (New) A polishing device as claimed in claim 1 wherein said porous polyvinyl  
acetal body has a pore size ranging from about 7 microns to about 40 microns for at least 90% of the  
pores.

Claim 29. (New) A polishing device as claimed in claim 1 wherein the weight of abrasive  
particles to the weight of urethane based adhesive ranges from about 30% to about 50%.

Claim 30. (New) A polishing device as claimed in claim 1 wherein said urethane based  
adhesive is selected from the group consisting of formulated aliphatic polyether urethane methacrylate,  
aromatic difunctional polyether urethane methacrylate; formulated multifunctional aliphatic urethane